

We claim:

1. A process for preparing a catalyst for olefin polymerization which is obtainable by bringing

5 A) at least one organic transition metal compound,

B) a mixture of at least two different organo metallic compounds and

C) at least one cation-forming compound

10 into contact with one another, wherein the organic transition metal compound A) is firstly brought into contact with the mixture of the organo metallic compounds B).

2. A process for preparing a catalyst for olefin polymerization as claimed in claim 1, wherein

15 D) at least one support

is used as further component.

20 3. A process for preparing a catalyst for olefin polymerization as claimed in claim 1 or 2, wherein

E) at least one Lewis base

25 is used as further component.

4. A process for preparing a catalyst for olefin polymerization as claimed in any of claims 1 to 3, wherein the cation-forming compound is a strong uncharged Lewis acid, an ionic compound having a Lewis-acid cation, an ionic compound containing a Brönsted acid as cation or a compound of the aluminoxane type.

30 5. A process for preparing a catalyst for olefin polymerization as claimed in any of claims 1 to 4, wherein the cation-forming compound is obtained during the preparation of the catalyst by reaction of a compound having at least one functional group containing active hydrogen with an organometallic compound.

35 6. A process for preparing a catalyst for olefin polymerization as claimed in claim 5, wherein the compound having at least one functional group containing active hydrogen is a hydroxyl-containing compound.

7. A process for preparing a catalyst for olefin polymerization as claimed in claim 6, wherein the hydroxyl groups are bound to an element of main group 13, 14 or 15 of the Periodic Table.
- 5 8. The use of a catalyst prepared as claimed in any of claims 1 to 7 for the polymerization of olefins.
9. A catalyst obtainable by a process as claimed in any of claims 1 to 7.
- 10 10. A process for the polymerization of olefins using a catalyst as claimed in claim 9.

15

20

25

30

35

40